



GLOBELICS

Second Globelics Academy

Applying National Innovation Systems Approach In the Context of Industrializing Countries:

**Methodological Unity and
Terminological Diversity in Literature**

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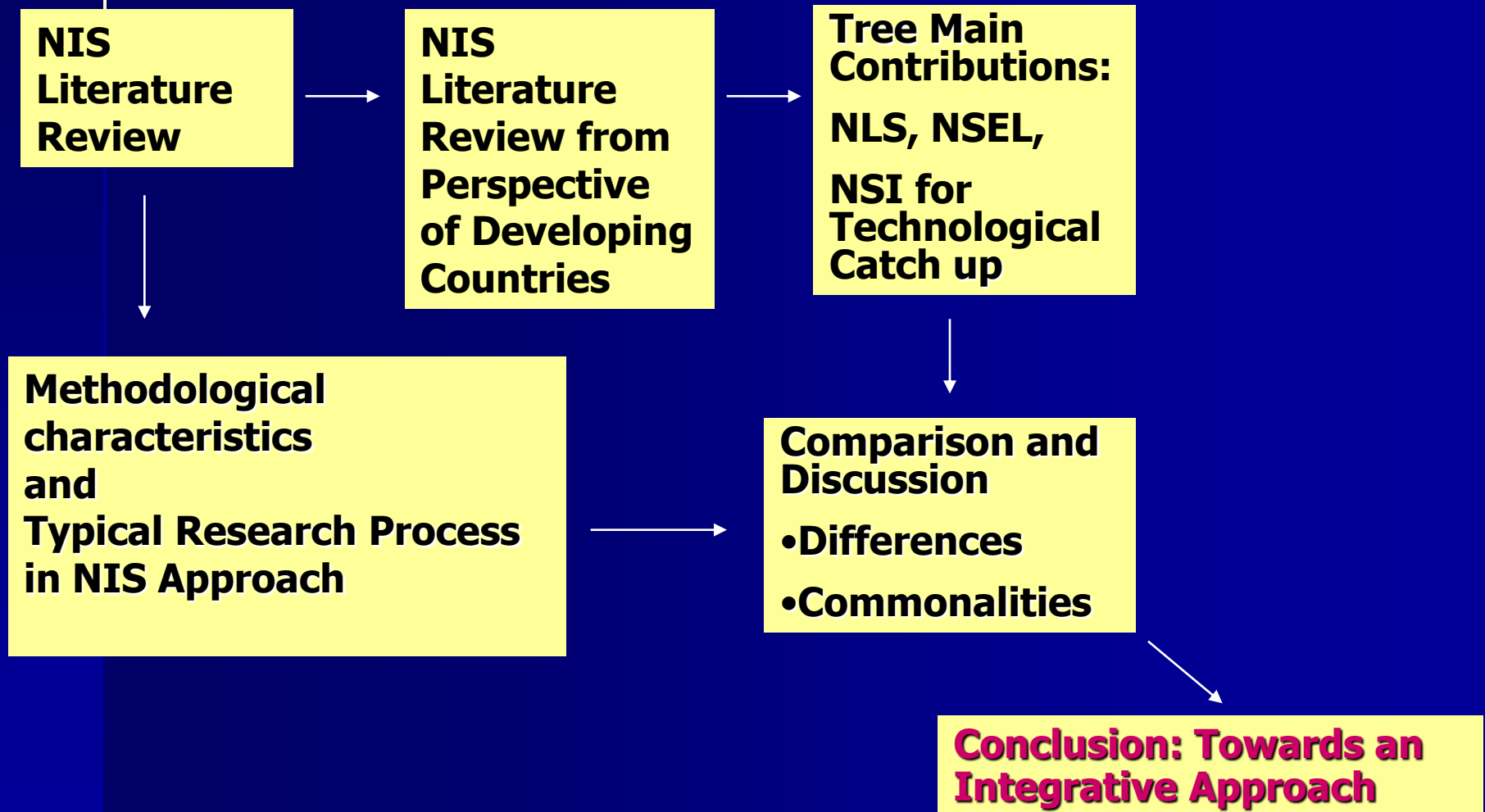
Introduction

- Emergence and diffusion of NIS concept
- Several unresolved methodological as well as conceptual issues (**Edquist, 2004; Lundvall, 2002**)
- The **applicability** and **relevance** of this approach to the context of industrializing countries (**Balzat and Hanusch, 2003**)
- **Different** and **Controversial** opinions

Main Question

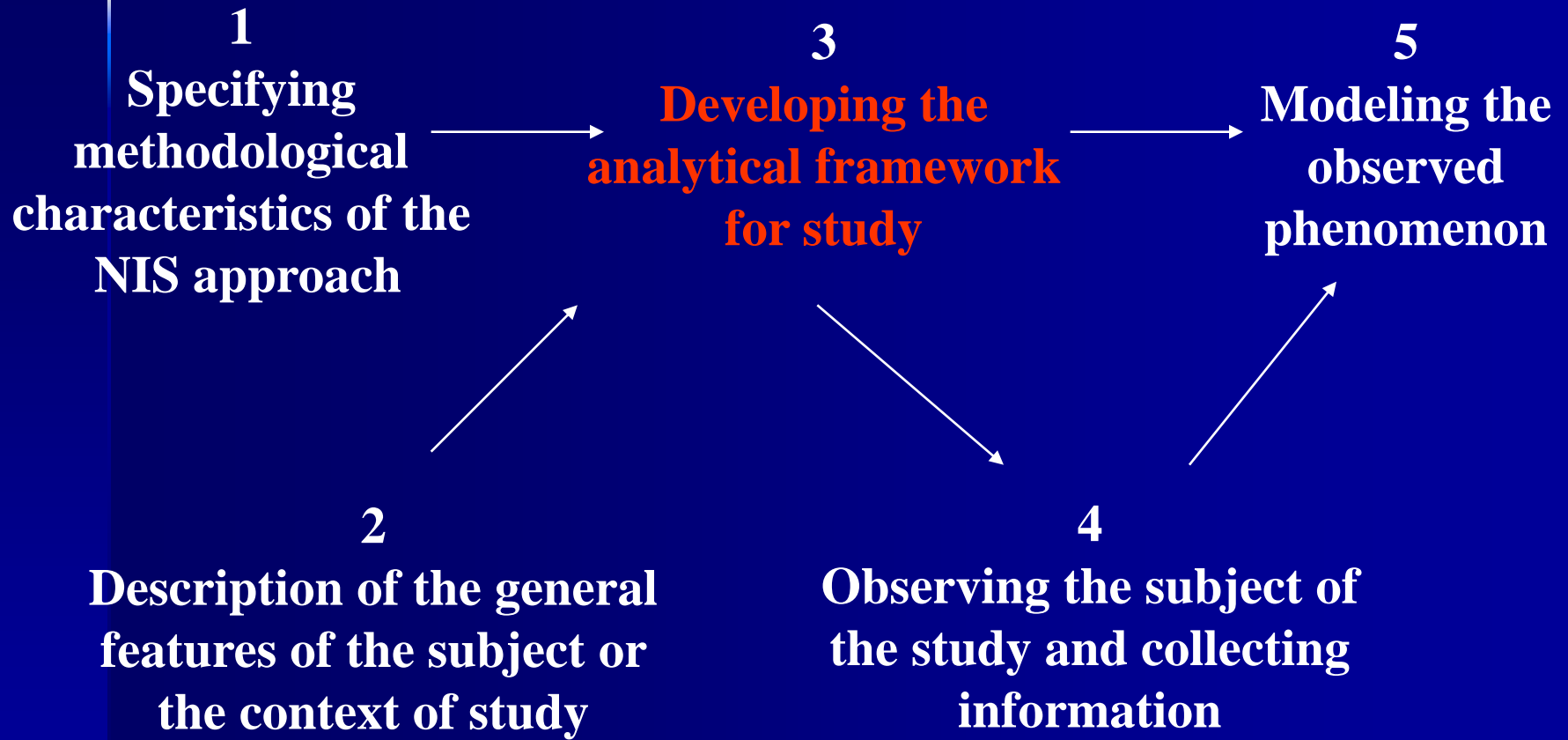
- **Can We Apply NIS Concept for Analyzing Developing Countries and If yes, How?**

Structure of Study





Typical research process in IS approach



NIS literature review: from the perspective of Industrializing countries

- (Phase 1) Historical Background
 - List (1841): German catch-up
 - Freeman (1983): Wide range of institutions
 - Freeman (1987): Post war Japan
 - Nelson (1993): NIS of five developing countries in a narrow sense

NIS literature review (continue):

- (phase 2) Re emergence: in the late of 90s
- Several efforts in scientific and political centers (DRUID, INTECH, Gloebelics, NSTDA, World Bank)
- Two interrelated issues:
 - Theoretical: applicability and its relevance to the developing countries
 - Relate to 1,2&3 stages of research process
 - Empirical : application and analyzing one or more countries
 - Cover the two last stages (4,5)
- Different opinions and some confusions

Two main trends

- Important revisions in the concept of NIS
 - National Learning Systems (NLS)(Viotti, 2001)
 - National Systems of Economic Learning (NSEL)(Mathews, 2001)
 - National Technology Systems (NTS)(Lall, 2003)
 - Systems of Innovation for Development (SID) (Edquist, 2001)
- Acceptance of applicability of NIS concept itself but with some adoptions and expansion
 - Lundvall (2001)
 - Arocena and Sutz (1999)
 - Gu (1999)
 - Intarakamnerd (2002)
 - More consensus in Globelics

Significant Contributions in NIS Literature for Developing Countries

Broad Definition

(Lundvall, 2001)

National Technology System

(Lall, 2003)

Systems of Innovation for Development
(Edquist, 2001)

Some Implications

(Gu, 1999)

National Learning Systems

(Viotti, 2003)

National Systems Of Economic Learning

(Mathews, 2001)

National Innovation Systems for Rapid Technological Catch up

(Wong, 2001)

The Comparison Based on Research Process

■ Dimensions

- Characteristics of NIS Approach (Strengths and Weaknesses)
- Common Characteristics of Industrializing Countries
- Main Propositions (Adjustments and corrections)
- Analytical Focus of Each Conceptual Framework

Table

National Learning Systems (Viotti, 2003)

- Strong distinction between innovation and learning
- Linking patterns of technical change, firm capabilities and strategies
- Emphasis on the role of government in shaping an enabling institutional environment for firms to move to higher technological capabilities

National Systems of Economic Learning (Mathews, 2001)

- Strong distinction between innovation systems and management of diffusion
- Focus not on individual firm competence building but on industry wide competence acquisition where firms and public agencies utilize various leverage devices
- Importance of approach to the creation of new industries and the need for institutional innovation required to foster economic learning

National Innovation Systems for Rapid Technological Catch up (Wong, 2001)

- Focus of analysis not on commonalities but on differences
- Five distinct routes to product & process technological catch up
- Each route requires different learning processes, innovation networks, and public policies

Main Results of Comparison

■ Main similarities

- Common methodological characteristics
(Methodological unity)
- Emphasis on differentiated nature of technological development in developing countries

■ Main differences

- Scientific Terms like learning, innovation and NIS (Terminological diversity)
- Focuses of analysis

Towards an Integrative Approach

- Clarification of key concepts and consensus building on their meanings
 - Role of scientific forums like Globelics
- Integrative analytical frameworks
 - Typologies of various modes of technological development and innovation systems
 - The common elements within and between each type
 - Observation of different trajectories within and between each type

Thank you